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FACT SHEET

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EVALUATION OF TEXAS SHADE TREES

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In recent years emphasis has been greater on the value and function of the shade tree in America. Because this valuable resource performs a number of environmental functions in our ecosystem, any damage to this resource means monetary loss. The first formula for determining a dollar value on shade trees was presented by the National Shade Tree Conference in 1947. Since then, several revisions have made the formula more acceptable to insurance companies, courts and the Internal Revenue Service.

Two approaches to determine the monetary value of shade and ornamental trees are the replacement value and the formula.

The Replacement Value

The value of many shade trees in Texas can be determined by finding the fair market value (planted and guaranteed) from tree nurseries. Larger tree companies sell and plant several species of trees up to 8 inches in diameter. The value of trees larger than available sizes can be estimated by the formula. Some species may not be found in tree nurseries regardless of size. Because the formula usually underestimates the value of small trees, it may be valid to determine the fair market value of similar species of comparable size.

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The Formula

Four factors are considered in the formula: size, species, condition and location.

Size. The shade tree evaluation committee determined that the cross-section area of the trunk should express shade tree size. The American Association of Nurserymen's approach in measuring tree diameter is generally followed; for 4-inch trees and smaller, the area is determined at a height of 6 inches. For trees with a diameter of 4 to 8 inches, the area is determined 12 inches above ground level. For trees of 8 inches and larger the area is determined at diameter breast height (4.5 feet). Exceptions to these rules would occur where low branches cause trunk swell. For multi-trunk trees, full diameter of the largest trunk plus half the diameter of the other trunks determine the correct diameter for computing the cross-section area. The cross-section area is determined by the formula $0.7854D^2$ where D equals the diameter measured. The current value of a perfect specimen shade tree, in the committee's opinion, is $15 per square inch of trunk cross-section. Thus a 10-inch Class I tree in perfect condition and location would be worth $1178.00 [$0.7854D^2 = 0.7854(10)^2 = 78.54$ in.^{2} ($15/in.^{2}) = $1178.00]

Species. Not all species and varieties of trees are of equal value. Permanence, maintenance needs, landscape quality and site adaptability influence the relative value of a species. Grouping tree species into value classes, one job of tree specialists, is subject to

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judgment and may vary from one part of the state to another. The following list may serve as a guide; the appraiser, however, must use his own judgment based on experience with the species in changing classes.

Class I — 100 Percent

Carya spp. — Hickories
Carya illinoensis — Pecan
Cornus florida — Flowering Dogwood
Diospyros texana — Texas Persimmon
Fagus grandifolia — American Beech
Ilex opaca — American Holly
Ilex vomitoria — Yaupon Holly
Juglans nigra — Black Walnut
Liquidambar stryraciflua — Sweet Gum
Magnolia grandiflora — Southern Magnolia
Magnolia virginiana — Sweetbay
Nyssa sylvatica — Tupelo
Picea pungens — Colorado Blue Spruce
Pinus edulis — Pinon Pine
Pinus ponderosa — Ponderosa Pine
Pinus taeda — Loblolly Pine
Pithecellobium flexicaule — Texas Ebony
Quercus alba — White Oak
Quercus falcata — Southern Red Oak
Quercus macrocarpa — Bur Oak
Quercus muhlenbergii — Chinkapin Oak
Quercus nigra — Water Oak
Quercus shumardii — Shumard Oak
Quercus texana — Spanish Oak
Quercus virginiana — Live Oak
Sophora secundiflora — Mescal Bean Sophora
Taxodium distichum — Bald Cypress
Ulmus crassifolia — Cedar Elm

Class II — 80 Percent

Acer grandidentatum sinuosum — Bigtooth Maple
Arbutus texana — Texas Madrone
Ehretia anacua — Anaqua
Fraxinus velutina (Select Male) — Velvet Ash
Fraxinus velutina 'glabra' — Modesto Ash
Ginkgo biloba — Ginkgo
Gymnocladus dioicus — Kentucky Coffeetree
Koelreuteria bipinnata — Southern Golden Raintree
Koelreuteria paniculata — Panicled Golden Raintree
Lagerstroemia indica — Crepe Myrtle
Liriodendron tulipifera — Tulippoplar
Olea manzanilla — Manzanilla Olive
Pinus elliottii — Slash Pine
Pinus halepensis — Aleppo Pine
Pinus nigra — Austrian Pine
Pinus thumbergii — Japanese Black Pine
Pistacia chinensis — Chinese Pistachio
Quercus phellos — Willow Oak
Quercus stellata — Post Oak
Quercus velutina — Black Oak
Sophora japonica — Japanese Pagodatree
Ulmus americana — American Elm

Class III — 60 Percent

Acacia farnesiana — Huisache
Acer rubrum — Red Maple
Betula nigra — River Birch
Broussonetia papyrifera — Paper Mulberry
Bumellia lanuginosa — Gum Elastic
Cedrus deodara — Deodar Cedar
Celtis occidentalis — Common Hackberry
Cercis spp. — Redbud
Chilopsis linearis — Desert Willow
Cupressus arizonica — Arizona Cypress
Eriobotrya japonica — Loquat
Fraxinus pennsylvanica lanceolata — Green Ash
Fraxinus velutina (seedling) — Arizona Ash
Gleditsia triancanthos inermis — Thornless Honeylocust
Juniperus spp. — Junipers, Cedar
Leucaena pulverulenta — Great Lead-tree
Malus species and varieties — Flowering Crab
Morus alba (fruitless) — Fruitless Mulberry
Persea americana — Avocado
Persea borbonia — Redbay
Pinus echinata — Shortleaf Pine
Pinus pinea — Italian Stone Pine
Platanus occidentalis — American Planetrees, Sycamore
Prosopis glandulosa — Honey Mesquite
Prunus mexicana — Mexicana Plum
Pyrus calleryana — Callery Pear
Sabium sebiferum — Chinese Tallow
Sapindus drummondii — Western Soapberry
Ulmus parvifolia — Chinese Elm
Ulmus parvifolia sempervirens — Evergreen Elm

Class IV — 40 Percent

Acer negundo — Boxelder
Acer saccharinum — Silver Maple
Ailanthus altissima — Tree of Heaven
Albizia julibrissin — Silktree
Catalpa spp. — Catalpa
Celtis laevigata — Sugarberry
Crataegus spp. — Hawthorns
Eleagnus angustifolis — Russian Olive
Firmiana simplex — Chinese Parasol Tree
Maclura pomifera — Bois d'Arc
Melia azedarach — Chinaberry
Morus rubra — Red Mulberry
Parkinsonia aculeata — Palo Verde
Populus spp. — Cottonwood and Poplars
Prunus blireinana — Ornamental Plum
Robinia pseudoacacia — Black Locust
Salix spp. — Willows
Tamarix spp. — Tamerisk
Thuja spp. — Arbor Vitae
Ulmus pumila — Siberian Elm
Zizyphus jujube — Jujube

The current International Shade Tree formula recognizes five tree classes. Because many of the lower rated species perform well in drier sites of western Texas, it is more difficult to rate them at 20 percent of a top-quality species. For these reasons, all species listed here are grouped into four classes.

Condition. Very few shade trees are perfect specimens. As trees become large and old they often become defective through decay, broken limbs, man-caused damage or poorly proportioned growth. The specialist making the appraisal must consider the tree condition and judge it on a percentage basis. For example, a 10-inch tree in Class I might be a poorly proportioned tree or display symptoms of heart rot. Instead of being worth $1178.00 it would be appraised at 60 percent or $707.00. Obviously a knowledge of tree pathology, entomology and physiology is important to professional evaluation in this category. A diagnostician should, in many situations, be consulted before deciding a tree's condition percentage.

As a guide, the following condition ratings based on life expectancy are offered:

Excellent (over 30 years)	75-100	percent
Good	50-75	percent
Fair	25-50	percent
Declining	0-25	percent

Location. Location is based on benefits from the tree. This factor fortifies the formula by recognizing the position of the tree relative to its function in the landscape. An understanding of the specific tree's role is helpful in applying this factor. The following conditions are outlined for guidance:

Memorial or historical trees	95-100	percent
Residential landscape trees	85-95	percent
Commercial and public area trees	70-85	percent
Windbreak and screening trees	60-70	percent
General park and highway trees	40-50	percent
Native wooded specimen trees contributing to aesthetics	20-40	percent

For example, a 15-inch American elm of good form, without signs of disease, has been growing in a city park in Central Texas. It has shaded a picnic area. This tree was vandalized by girdling the tree with an axe. What was the monetary damage to the tree assuming it has no chance of survival?

The formula:

(Size)	(15 dollars)	(Class)	(Condition)	(Location)	= Value
$[0.7854.(15)^2]$	(15)	(80%)	(100%)	(50%)	= $1060.00

For insurance companies and the courts, shade tree evaluation *should be attempted only by a professional tree specialist.* The Internal Revenue Service has a different approach to tree appraisal. Any casualty loss claimed must show that the value of the property must have been reduced by the amount of the claim. However, if the outlined procedures are followed, using qualified appraisers, these principles of shade tree evaluation can well apply in tax losses. For example, the cost of repairing damage to property may serve as evidence of the proprty loss. Thus, replacement costs are acceptable as evidence of reduction of property value. To back up tree casualty loss, claims with IRS rulings by reviewing officers of tree and shrub losses of a similar nature may be used. In addition, the attitude of regional reviewing officials toward shade trees and their legal standing or value may determine the extent of the casualty loss.

The formula description of shade tree evaluation is not intended to help determine the value of fruit and nut bearing trees when their value might be more appropriately determined by crop yield. Neither is it intended as a basis for evaluation of palm trees, since palms do not expand in diameter as do the species listed here. Fair market value or a dollar value per foot of height growth are the valid means of determining the worth of palm trees.

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